

Claims

1. A computer network configured to define and update data structures within a shared computer-generated environment, comprising a plurality of user-computer terminals having display means, storage means, processing means and network connection means, wherein

said storage means stores said data structures and program instructions;

said processing means is configurable by said program instructions to perform the steps of:

equipping a first of said data structures with continuous data at a first of said user-computer terminals;

at a second of said user-computer terminals, predicting said continuous data of said first data structure;

comparing said predicted continuous data with continuous data of a second of said data structures stored at said second user-computer terminals; and

updating said first data structures at said second user-computer terminal in response to said comparison.

2. A computer network according to claim 1, wherein said data structures stored in said storage means are known as duplication masters or duplicas or a combination thereof.

3. A computer network according to claim 1, wherein said program instructions stored in said storage means include a duplication

manager.

4. A computer network according to claims 1 to 3, wherein said first of said data structures at said first of said user computer terminals is duplicated and stored as a duplica at said second of said user computer terminals.

5. A computer network according to claims 1 to 4, wherein said first of said data structures stored as a duplica at said second of said user computer terminals is updated by said first of said data structures stored at said first of said user-computer terminals.

6. A computer network according to claim 1, wherein said continuous data is preferably, but not exclusively nor necessarily, positional data expressed as cartesian co-ordinates within a three-dimensional environment.

7. A computer network according to claim 1, wherein said prediction is accomplished according to the protocol of Position History Based Dead Reckoning.

8. A computer network according to claim 1, wherein said comparison determines a distance between said first and second of said data structures, also known as relevance.

9. A computer network according to claims 1 and 8, wherein said relevance determines the frequency according to which said first data structure stored as a duplica at said second user-computer terminal is updated.

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10. A computer network according to claim 9, wherein said updating frequency can be dynamically increased or decreased by means of a quality factor introduced in said comparison as a factor of the available network bandwidth.

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11. A method of updating data structures within a computer-generated environment shared between users connected via computer terminals connected to a network, wherein a user's computer terminal performs the steps of

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equipping a data structure with continuous data;

predicting said continuous data of said data structure;

comparing said predicted continuous data with continuous data of a second data structure stored at a second user-computer terminal; and
updating said data structure in response to said comparison.

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12. A method according to claim 11, wherein said data structures stored in said storage means are known as duplication masters or duplicas or a combination thereof.

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13. A method according to claim 11, wherein said program instructions stored in said storage means include a duplication manager.

14. A method according to claims 11 to 13, wherein said first of said data structures at said first of said user computer terminals is duplicated and stored as a duplica at said second of said user computer terminals.

5 15. A method according to claims 11 to 14, wherein said first of said data structures stored as a duplica at said second of said user computer terminals is updated by said first of said data structures stored at said first of said user-computer terminals.

10 16. A method according to claim 11, wherein said continuous data is preferably, but not exclusively nor necessarily, positional data expressed as cartesian co-ordinates within a three-dimensional environment.

15 17. A method according to claim 11, wherein said prediction is accomplished according to the protocol of Position History Based Dead Reckoning.

20 18. A method according to claim 11, wherein said comparison determines a distance between said first and second of said data structures, also known as relevance.

25 19. A method according to claims 11 and 18, wherein said relevance determines the frequency according to which said first data structure stored as a duplica at said second user-computer terminal is updated.

20. A method according to claim 19, wherein said updating frequency can be dynamically increased or decreased by means of a quality factor introduced in said comparison as a factor of the available network bandwidth.

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21. A computer-readable medium having computer-readable instructions executable by a computer such that, when executing said instructions, a computer will perform the steps of

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equipping a data structure with continuous data;

predicting said continuous data of said data structure;

comparing said predicted continuous data with continuous data of a second data structure stored at a second user-computer terminal; and

updating said data structure in response to said comparison.

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22. A computer-readable memory system having computer-readable data stored therein, comprising

one or a plurality of duplicate masters;

one or a plurality of duplicas; and

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an application including a duplication manager which requires objects to be shared over a network.

23. A computer-readable memory system according to claim 22, wherein said program instructions are configured to

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equip a data structure with continuous data;

predict said continuous data of said data structure;

compare said predicted continuous data with continuous data of a second data structure stored at a second user-computer terminal; and update said data structure in response to said comparison.

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